

## REMARKS/ARGUMENTS

Independent Claim 36 has been replaced by new Claim 75. New Claim 75 basically amends prior Claim 36 by reciting that the catalyst/catalyst carrier is obtained from layer-lattice silicates that contain a reduced aluminum content achieved by a dealuminating process. In effect, Claim 75 is a product-by-process claim and, as will be seen hereafter, distinguishes over the prior art.

Additionally, Claims 37-48, 53, 54, 62 and 74 have been amended to call for a "catalyst/catalyst carrier." The purpose of this Amendment is to point out that the catalyst carrier can, indeed, act as a catalyst as indicated, for example, on Page 11, l 28- Page 12, l 2.

Turning to the art rejections, Claims 36-39, 48-51, 54-62 and 74 stand rejected as being anticipated by Jorgensen, et al, Jorgensen '537. The rejection is respectfully traversed. Jorgensen '537 does not disclose that layer-lattice silicates are subjected to a dealuminating process. Rather, Jorgensen '537 discloses that a Zeolite Beta is subjected to treatment with HCL (See Col. 11, l 34-36). A layer-lattice silicate, as claimed in Claim 75, is not the same as the Zeolite Beta. Indeed, if a layer-lattice silicate material such as montmorillonite were subjected to the hydrochloric acid treatment per the teachings of Jorgensen '537, no significant dealumination would occur. Certainly, no such dealumination would occur to reduce the aluminum content to below 1% by weight.

While it is true that Jorgensen '537 discloses montmorillonite clay, those materials are only disclosed in the context of being a catalyst carrier material for the Zeolite Beta catalyst (See in this regard, Col. 12, l 64- Col. 13, l 8. Nowhere in Jorgensen '537 is there a teaching or suggestion to dealuminize the montmorillonite clay to achieve an aluminum content below 0.3 weight percent.

The Jorgensen '537 method uses phosphoric acid to convert the Zeolite catalyst from the sodium form to the acid form to enable dealuminization in an aqueous phase. That is to be

contrasted with the present invention wherein the phosphoric acid deposited on the dealuminized layer-lattice silicate functions as the catalytically active species for the reaction, e.g., alcohol synthesis. Moreover, Jorgensen '537 employs a calcination step to remove the organic template substances in the process of manufacturing the catalyst, whereas according to the present invention, calcination is used simply to regenerate the catalyst after use.

The Zeolite Beta catalyst described in Jorgensen '537 is a hydrogenation catalyst with incorporated palladium and not a hydration catalyst.

Lastly, it is clear that in Jorgensen '537 the starting material following the dealuminization step is still a zeolite. See in this regard Col. 12, ll 21-25 where it is stated:

“The crystalline dealuminized products obtained by the method of this invention has substantially the same crystallographic structure as that of the starting aluminosilicate zeolite, but with increased silica : alumina ratios.”

It is abundantly clear that Jorgensen '537 does not disclose or suggest Applicants' claimed catalyst/catalyst carrier as set forth in Claim 75, i.e., one having an aluminum content of less than 0.3% by weight and that has been obtained from layer-lattice silicates that contain aluminum by a dealuminating process. Having demonstrated that Claim 75 is patentable over Jorgensen '537, it is also respectfully submitted that Claims 37-39, 48-51, 54-62 and 74 are likewise patentable over Jorgensen '537. More specifically, all of those claims, be they composition or method claims, contain the limitation regarding the fact that the catalyst/catalyst carrier contains less than 0.3% by weight aluminum, which has been obtained by impregnating or treating a lattice-layer silicate with an acid to dealuminize the lattice-layer silicate to obtain the specified, reduced aluminum content.

Claim 62 stands rejected as anticipated or, in the alternative, obvious over Jorgensen '537. Applicants' remarks above with respect to the differences between the Jorgensen '537 process and Applicants' process are applicable to this rejection. More specifically, Jorgensen '537 does not disclose dealuminizing a layer-lattice silicate so that the aluminum content is less than 0.3 weight percent. The Examiner's position that any differences that can be shown in the product by process set forth in Claim 62 as opposed to the product taught by Jorgensen '537 would have been obvious to one of ordinary skill in the art at the time the invention was made as a routine modification of the Jorgensen '537 product is not well taken. As has been abundantly pointed out above, the Jorgensen '537 process does not dealuminize a layer-lattice silicate. Accordingly, Applicants' product is *ipso facto* different from anything produced by Jorgensen '537 and the necessity for showing unexpected results is rendered moot. It is respectfully submitted that Claim 62 is patentable over Jorgensen '537.

Claims 40-45 stand rejected as being unpatentable over Jorgensen '537 as applied to Claims 36-37 and further in view of Lambert '778. The thrust of the rejection is that it would have been obvious to one of ordinary skill in the art to use the pore volume of the product of Lambert '778 in the hydrogenation catalyst carrier of Jorgensen '537, because Lambert discloses this pore volume in a catalyst/carrier for use in hydrocarbon conversion. The rejection is respectfully traversed. To begin with, Claims 40-45 are all dependent upon Claim 75 which, as has been demonstrated above as clearly patentable over Jorgensen '537. The combination of Jorgensen '537 with Lambert '778 does not cure the infirmities of Jorgensen '537. More specifically, Lambert '778 teaches the use of a gamma aluminum catalyst with a pore volume of 0.1 to 1 cc/g. The gamma aluminum catalyst is isomorphously substituted with a silicon. The produced catalyst is a hydrogenation catalyst and not a hydration catalyst. There would be no motivation for the skilled artisan, armed with knowledge

of Jorgensen '537 to incorporate any teaching of Lambert '778, specifically, since Lambert '778 does not disclose the zeolites, but a totally different starting material, i.e., gamma aluminum. Would a skilled artisan, interested in graphite look to a disclosure regarding diamonds? Accordingly, it is respectfully submitted that Claims 40-45 are patentable over Jorgensen '537, as applied to Claims 36-37, and further, in view of Lambert '778.

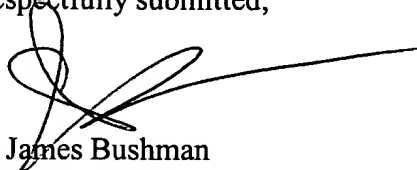
Claims 46-47 stand rejected as obvious over Jorgensen '537 as applied to Claims 36-37 and further, in view of McWilliams, U.S. No. 5,145,659. As above, Claims 46 and 47 are dependent upon Claim 75, which has been demonstrated to be clearly patentable over Jorgensen '537. The combination of Jorgensen '537 with McWilliams '659 does nothing to cure the infirmity of Jorgensen '537 *vis-a-vis* Claims 46 and 47. It is the Examiner's position that it would have been obvious to use the crushing strength of McWilliams '659 in the catalyst carrier of Jorgensen '537, since McWilliams discloses crushing strength for use in a catalyst to increase the silica of the available matrix. However, and as pointed out with respect to Lambert '778, McWilliams '659 discloses a hydrogenation catalyst and not a hydration catalyst. Moreover, McWilliams '659 teaches the production of a zeolite material from a clay having lattice-layer type structure and therefore actually teaches away from Applicants' invention. It is respectfully submitted that Claims 46-47 are clearly patentable over Jorgensen '537 in view of McWilliams '659.

From the above, it can be seen that all of the applied references are directed to zeolites and not to dealuminized lattice-layer aluminosilicates the catalyst/catalyst carriers of the present invention. Nor is there any motivation for the skilled artisan, when reviewing the applied references, singularly or in combination, to use Applicants' method to arrive at the products set forth in Claim

75 or any of the dependent claims. Accordingly, it is respectfully submitted that all pending claims are clearly patentable over all the cited references.

In view of the foregoing amendments and remarks, it is respectfully submitted that all pending claims are in condition for allowance, which is hereby earnestly solicited and respectfully requested.

Respectfully submitted,



C. James Bushman  
Reg. No. 24,810

Date: October 23, 2003

BROWNING BUSHMAN P.C.  
5718 Westheimer, Suite 1800  
Houston, TX 77057-5771  
Tel.: (713) 266-5593  
Fax: (713) 266-5169

**CERTIFICATE OF MAILING**

I, Sheri Cooper, hereby certify that this correspondence and all referenced enclosures are being deposited by me with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22312-1450, on October 23, 2003

By: 